DOCUMENT RESUME

ED 262 933 RC 015 477

AUTHOR	Shaper, Ruth; And Others
TITLE	Children's Deaths in Maine, 1976-1980 Final Report.
INSTITUTION	Maine State Dept. of Human Services, Augusta.
PUB DATE	Apr 83
NOTE	51p.
PUB TYPE	Reports - Research/Technical (143) -- Statistical Data (110)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	Accidents; *Adolescents; *Children; Comparative Analysis; *Death; Disease Incidence; *Economically Disadvantaged; Infant Mortality; Low Income Groups; *National Norms; Poverty; State Surveys; Statistical Surveys; Suicide; Traffic Accidents; Young Adults
IDENTIFIERS	Drownings; Homicide; *Maine; *Mortality Rates

ABSTRACT

The final report of a statistical study of 1,737 childhood deaths in Maine from 1976-80 by cause and age also looks at distribution of deaths by cause and age in Maine's low-income population. The findings showed disease was the major cause of death (1,068 deaths) followed by accidents (578 deaths), suicide (50 deaths), and homicide (29 deaths). Disease caused most deaths of children under 5 years; accidents caused most deaths for children 5-19 years. Maine's overall child death rate, as well as rates for disease-related causes, accidents other than motor vehicle, fire, or drowning, and homicide were significantly lower than national rates. The rate of accidental deaths due to fire was significantly higher than the national rate. Deaths due to motor vehicle accidents or drownings were slightly lower than the national rate. Maine's death rates for children under 5 years were significantly lower than national rates. Maine death rates for children of all ages in low-income families were three times higher than corresponding rates for other children for all causes except suicide and homicide. A methodological summary and numerous tables present the statistics. Appendices include additional discussion of methodology, detailed supporting tables, and copies of state information forms. (LFL)

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Children's Deaths in Maine

1976-1980
Final Report

Maine Department
of Human Services
April, 1983

ED262933

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Inquiries concerning the Report should be addressed to the Office of the Commissioner, Department of Human Services, State House Station 11, Augusta, Maine 04333.

STATE OF MAINE
DEPARTMENT OF HUMAN SERVICES
AUGUSTA, MAINE 04333

JOSEPH E. BRENNAN
GOVERNOR

MICHAEL R. PETIT
COMMISSIONER

May, 1983

Dear Citizen:

The subject of childhood death is not pleasant. Yet it is a reality confronted each year by hundreds of American families and is a daily concern of medical and human service professionals.

The Maine Department of Human Services' study of childhood deaths in Maine, with specific attention being given to the difference in death rates between low-income and other children, may be the first of its kind in the United States.

That the study confirms a difference between the death rates of children according to family income levels may not be surprising to most people who work in human services. What is surprising—and alarming—is the magnitude of that disparity—a ratio of more than 3 to 1. We believe this finding has serious implications for current public policy concerning children.

This report will be of concern to all those interested in the well-being of children. It is our sincere hope that it will help to stimulate a public discussion about what can be done to reduce the death rate of our children. Surely there is nothing more important we could accomplish.

Sincerely,

Michael R Petit

Michael R. Petit
Commissioner

The following Maine Department of Human Services staff made substantial contributions to the preparation of this report

Conceptualization	Michael Petit, Commissioner Frank McGinty, Deputy Commissioner, Health & Medical Services Robert McKeagney, Deputy Commissioner, Social & Rehabilitation Services William Nersesian, M.D., Director Bureau of Health
Study Design, Coordination and Report Writing	Ruth Shaper, Bureau of Health
Intra-Departmental Coordination	Douglas Hall, Office of Social & Rehabilitation Services
Statistical Analysis	Ellen Naor, Bureau of Health Planning and Development Don Lemieux, Bureau of Health Planning and Development David Wilson, Bureau of Health Planning and Development
Numerator Assembly	Sabra Burdick, Bureau of Social Services Catherine Sands, Bureau of Social Services Jeanette Talbot, Bureau of Social Services
Denominator Assembly	Staff, Division of Data Processing, Office of Management and Budget
Report Preparation and Statistical Tables	Maralee Kaler, Bureau of Health Sue Whitley, Bureau of Health Planning and Development
Graphic Design	Lori Ellis

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In the Fall of 1981, four Maine children died under suspicious circumstances and at least three were believed to have died at the hands of a family member. In the aftermath of these deaths, the Commissioner of the Department of Human Services, which has broad responsibilities for the health and welfare of Maine children, directed that Department staff conduct a study of childhood deaths in Maine between 1976-1980. The methodology and results of the study are presented in this report.

The staffs of four units within the Department cooperated in the conduct of the study—the Bureau of Health, the Bureau of Health Planning and Development, the Bureau of Social Services and the Office of Management and Budget's Division of Data Processing.

This is the final report of a study of childhood deaths in Maine from 1976-1980.[1] The study examines children's deaths in Maine for the period 1976-1980 by cause and age and for the U.S. for 1978 only. In addition, it looks at the deaths from the perspective of their distribution by cause and age in the low-income population in Maine. The principal findings of the study were:

Major Causes of Children's Deaths in Maine (Ages 0-19)

Finding 1
During the period 1976-1980 there were 1,737 children's deaths in Maine. The major cause of death was the disease-related grouping (1,068 deaths), with accidents (578 deaths) being the second major cause and homicide (29 deaths) and suicide (50 deaths) being relatively minor causes.

Finding 2
For the period 1976-1980, the highest death rates by age groupings were as follows:

Under 1 year	Disease-related
1- 4 years	Disease-related
5- 9 years	Accidents
10-14 years	Accidents
15-19 years	Accidents

Maine Children's Death Rates Versus U.S. Children's Death Rates (Ages 0-19)

Finding 3
When death rates of Maine children were compared with U.S. children's death rates, Maine's overall children's death rate was found to be **significantly lower** than the U.S. rate (92.5 vs. 110.4/100,000).

Finding 4
Maine children's death rates were found to be **significantly lower** than U.S. rates for:

Disease-Related Causes (56.9 vs. 69.8/100,000)
Accidents other than Motor Vehicle, Fire and Drowning (4.3 vs. 7.2/100,000)
Homicide (1.5 vs. 2.7/100,000)

Finding 5
For accidental deaths due to fire, the Maine children's death rate was found to be **significantly higher** than the U.S. rate (3.0 vs. 1.8/100,000).

Finding 6
The Maine rate for Motor Vehicle Accidents appeared slightly higher than the corresponding U.S. rate (54.1 vs. 49.6/100,000); while the Maine rate for Drowning Accidents appeared slightly lower than the U.S. rate (2.6 vs. 3.3/100,000). Neither of these differences was statistically significant.

Finding 7
When Maine children's death rates were compared with corresponding U.S. rates by age, Maine rates were found to be **significantly lower** than U.S. rates for two age groups:

Under 1 year (995 vs. 1,218/100,000)
1-4 years (51.8 vs. 62.7/100,000)

[1] *A preliminary report of the study was distributed in August, 1982. Several methodological flaws have since been uncovered and corrected, as reflected in this report.*

ERRATA

Finding 6 should read: "The Maine rate for motor vehicle accidents appeared slightly lower than the corresponding U.S. rate (20.9 vs. 21.1/100,000); and the Maine rate for drowning accidents also appeared slightly lower than the U.S. rate (2.6 vs. 3.3/100,000). Neither of these differences was statisfically significant."

Maine Children's Death Rates in Low Income Versus Other Population (Ages 8 Days-17 Years)

Finding 8

During the period 1976-1980, Maine death rates for children in low-income families were found to be **substantially higher**[2] than the corresponding rates for other children for all causes except suicide. The ratios of the death rates of children in low-income families to those of other children, by cause of death, were found to be as follows:

Causes of Death	Ratios
All Causes	3.1 to 1
All Accidents	2.6 to 1
Motor-Vehicle	2.2 to 1
Fire	4.9 to 1
Drowning	4.0 to 1
Other Accidents	1.8 to 1
Suicide	1.0 to 1.6
Homicide	5.0 to 1
Disease-Related Causes	3.5 to 1
Congenital Anomalies	3.7 to 1
Perinatal Conditions	2.3 to 1
Other Disease-Related	3.6 to 1

Finding 9

During the period 1976-1980, Maine death rates for children in low-income families were found to be **substantially higher** than the corresponding rates for other children for all ages. The differences in death rates were statistically significant for all age groups. The ratios of the death rates of children in low-income families to those of other children, by age group, were found to be as follows:

Age Groups	Ratios
8 days-4 years	2.9 to 1
5-14 years	3.2 to 1
15-17 years	3.0 to 1

[2]*The differences in death rates were found to be statistically significant for all causes except homicide and suicide. The small number (under 10) of deaths in the low-income or the other population from these two causes precluded the calculation of death rates for use in test of statistical significance.*

ERRATA Finding 8 should read: "During the period 1796-1980, Maine death rates for children in low-income families were found to be substantially higher[2] than the corresponding rates for other children for all causes except suicide and homocide.

The suicide ratio in the table "Cause of Death" should read: "Suicide 1.6 to 1". The number "2" should be added to "Suicide" and "Homocide" in the table.

9 The following sentence should be added to Footnote "2": "The ratios are included for illustrative purposes only."

Methodological Summary

The following is a summary of the methods used to arrive at the results of the Maine Children's Death Study (1976-1980) completed in March, 1983.

General Methodological Features

The causes of death used in this study are divided as follows:

a. All Causes
b. All Accidents
   (1) Motor Vehicle
   (2) Fire
   (3) Drowning
   (4) All Other Accidents
c. Suicide
d. Homicide
e. Other External[2]
f. Disease-Related Causes[4]
   (1) Congenital Anomalies
   (2) Perinatal Conditions
   (3) All Other Disease-Related Causes

Test of Statistical Significance

The statistical significance of differences between death rates was determined using a test based on the Poisson distribution. Significance tests are used to measure whether or not the difference between values can be ascribed to chance. Tests based on the Poisson distribution are suitable for use with data descriptive of "rare events" such as the deaths studied here.

Methodology: Children's Deaths in Maine (1976-1980) and United States (1978) by Cause and Age

In developing the data analyses in this section of the study, the following general decisions were made:

- The U.S. mortality data used for comparison purposes are for the year 1978 only, the most recent year for which such data were available from the National Center for Health Statistics (the year 1978 is also the mid-point of the time period covered by this study).
- In order to compare Maine and U.S. statistics most accurately, the U.S. data selected for comparison purposes are for white children only because the 1980 U.S. Census shows that 98.7 percent of the Maine population is white.[5]
- The age-groupings used in this section of the study were selected on the basis of the availability of comparable U.S. data. Thus, in this section, children's deaths in the Maine and U.S. population ages 0-19 years were analyzed. Consequently, the results of the analyses in this section are not directly comparable with those in the following section which covers low-income-related deaths in the Maine population ages 8 days-17 years.

To develop the analyses in this section a computerized file of Maine deaths, ages 0-19 years, was used for the years 1976-1980. The deaths were then grouped by cause into the categories listed above, using ICDA-8[6] codes for 1976-1978 and ICD-9[7] codes for 1979-1980. The SPSS[7] software package was used to cross-tabulate cause of death by age and by county of residence.

For the denominator used in calculating Maine death rates, a Department series of statistical population estimates adjusted to reflect the results of the 1980

Census was used for the years 1976-1979. The U.S. Census figure was used for the 1980 population.

For the denominator used in calculating U.S. death rates, U.S. Census Bureau estimates for the 1978 U.S. white population, ages 0-19 years, were used.

Methodology: Distribution of Children's Deaths in the Low-Income Population in Maine[8]

In developing the data analyses in this section the following decisions were made:

- The "Low-income" children's population was defined as those Maine children and their families who received services from the Department's income security (AFDC and Food Stamps) and Medicaid Programs.[9] It is estimated that approximately 90 percent of Maine children below 125 percent of the Federal Poverty Level ("Poor" and "Near Poor") were served by these three programs in 1980.[10] The definition of the "Low-income" population adopted for purposes of this study is based on the data availability for a specific population group, namely children who died in the years 1976-1980, and who could be identified clearly as having participated, directly or through their parents, in the Department's programs.
- The age-grouping used in this section, ages 8 days-17 years, was selected on the basis of the following considerations:
  a. Deaths of children ages 7-days-and-under were eliminated because there was no way of ascertaining how many of these children and their families were eligible for Departmental programs and may not have had time, between the child's birth and death, to be enrolled in the programs."[11]
  b. Children ages 18-19 were not included because they had reached the age of majority.
- The analyses in this section were limited to Maine data only. No U.S. data are available for comparison purposes for the age grouping 8 days-17 years, nor are comparable U.S. data available on causes of childhood mortality in the nation's low-income population.

The principal questions to be answered in this section were: "Is the mortality rate among Maine's Low-income children ages 8 days-17 years higher than that among Other children?" and if so, "Is the difference statistically significant?"

To provide answers to these questions, two types of death rates were calculated for Low-income and for Other children. These two rates reflect different ways of defining and determining low-income status for children in Maine.

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[5] *Other injuries, undetermined whether accidentally or purposely inflicted.*

[6] *This cause is treated under the general heading "Disease Related" throughout this report; more detailed information about its sub-parts may be found in Appendix 2, page App. 2.1.*

[7] *See Appendix 2, page App. 2.2 for the U.S. Census tabulation of the 1980 Maine population by race; and for U.S. death rates by cause of death for all races.*

[8] *ICDA-8 and ICD-9—International Classification of Diseases Adapted for use in the United States, Eighth and Ninth Revisions, published by the U.S. Department of Health & Human Services.*

[9] *SPSS—Statistical Package for the Social Sciences, National Opinion Research Center, University of Chicago.*

[10] *Additional information on the methodology employed in this section of the study appears in Appendix 3.*

[11] *For basic eligibility criteria for the Maine AFDC, Food Stamp and Medicaid programs, see Appendix 3, pp. App. 3.1-3.2.*

[12] *For information about this estimate, see Appendix 3, pp. App. 3.2-3.3.*

[13] *See Appendix 3, pp. App. 3.3-3.4 for specific causes of death and Departmental program status for the children ages 7-days-and-under who were eliminated from the study; and for the method used to eliminate this age group from the denominator populations.*

The **point-based rate**, which represents the most restrictive definition, is the "snapshot approach". Children are considered to have low-income status only when they are actually participating in one of the three Departmental programs considered here; non-participation is equated with the absence of Low-income status. The point-based rate is the number of deaths among children who were program participants at the time of death divided by the estimated number of Low-income children at any particular point in time. The point-based rates calculated for this study may be expressed as shown in the illustration below.

The **period-based rate** is derived from the consideration that low-income status is not an "on-again, off-again" situation. Low-income status during a specified period of time is defined as participation in a Departmental program one or more times during the period. Thus, the annual period-based rate is the ratio of deaths, during a calendar year, of children who participated in a Departmental program at any time during the 12 months preceding their death to the number of children who were program participants at any time during the year. The period-based rates calculated for this study may be expressed as shown in the illustration below.

Point-based rate

Low Income Children

Five-year average annual point-based death rate for Low Income children = (Average number of deaths (1976-1980) to children in age group who were program participants at time of death / Average number (1976-1980) of Low-income children in age group on any given day during the five-year period) X 100,000

(Numerator)

(Denominator)

Other Children

Five-year average annual point-based death rate for Other children in age group = (Average number of deaths (1976-1980) to children in age group who were program participants at time of death / Average number (1976-1980) of Other children in age group on any given day during five-year period) X 100,000

(Numerator)

(Denominator)

Period-based rate

Low Income Children

Five-year average annual period-based death rate for Low-income children = (Average number of deaths (1976-1980) to children in age group who were program participants at any time during 12 months preceding death / Average annual unduplicated count (1976-1980) of Low-income children in age group) X 100,000

(Numerator)

(Denominator)

Other Children

Five-year period-based death rate for Other children = (Average number of deaths (1976-1980) to children in age group who were not program participants at any time during 12 months preceding death / Average annual number of Other children in age group) X 100,000

(Numerator)

(Denominator)

ERRATA

The numerator of the point-based rate for Other Children should read: "Average number of deaths (1976-1980) to children in age group who were not program participants at time of death."

Both types of rates (point- and period-based) were calculated for the selected causes of death and the three age groups 8 days-4 years, 5-14 years and 15-17 years, as well as the total age group 8 days-17 years, in order to control for the possible confounding effect of differential age distributions among Low Income and Other children. Mortality rates are highest among younger children, and it is likely that "Low-Income children" as defined here are younger than other children. These factors alone could cause Low-Income children to have higher mortality rates than Other children even in the absence of any risks associated with low-income status. However, if Low-Income children exhibit higher mortality in several age groups, confidence in the validity of an overall difference is strengthened.[12]

In order to calculate the two rates described above, two principal sets of data were collected as follows:

Numerator Data—To determine which of the Maine children who died during the five-year period were part of the "Low-Income" population as defined above, relevant data (name, age, residence town and county, cause of death, father's surname, etc.) were extracted from all death certificates for the period and pre-printed on a data form developed for that purpose.

Since AFDC/Medicaid recipient files are periodically purged, a Client Master File[13] for the period 1976-1980 had to be reconstructed. Microfiche displays of each record on the reconstructed master file were generated and the entries on the microfiche compared manually with the pre-printed information on the data forms. When program participants were identified, client-ID numbers and program start and end dates were transcribed onto the forms.

Program participation start and end dates were noted for each deceased child who had received Program services in order to identify the Low-Income children who participated in a Departmental program at the time of their death (for the calculation of the point-based rate); and the Low-Income children who participated in a program within one year prior to death (for the calculation of the period-based rate).

The completed forms were used as data entry sheets to establish a computer record for each deceased child. The computerized death records with the attached client-ID numbers and AFDC/Medicaid program history were then merged with the computerized Food Stamp Program Files. Where matches were established, the Food Stamp Program data were incorporated into the individual's record.

To check the coding of the AFDC/Medicaid data, a random sample of approximately 250 records was selected for review. After examining the results of this quality control sample and finding an error rate of 2—3%, it was decided that all of the data forms should be checked by hand for possible errors. Coders were instructed to record any discrepancies or new information directly onto the forms.[14] When the review was complete a corrected death/client history tape was produced and merged with the Food Stamp Program File.

To determine which of the Maine children who died during the five-year period were part of the "Other" (non-low-income) population, as defined by non-participation in the Departmental programs, the relevant number of Low-Income deaths was subtracted from the total number of deaths.

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[12] *Additional information on the point-based and period-based rates calculated as a part of this study and tables showing the rates, are presented in Appendix 3, pp. App. 3.4-3.16.*

[13] *See Appendix 3, pp. App. 3.4 and 3.6 for sample data form and additional information about Client Master file and its uses in this study.*

[14] *All of these errors were "missed" low-income deaths, i.e., deaths of children who were participating in a Departmental program and had been missed during the first reading of the file.*

Denominator Data—To develop the denominator for the point-based rate, periodic reports of all persons eligible for and participating in the programs were used to derive annual averages, 1976-1980, of monthly unduplicated counts of persons 0-17 years of age who participated in at least one of the programs. The data were then distributed by age and aggregated into the age groupings. The five year average denominator was computed by averaging the yearly figures by age.

To develop the denominator for the period-based rate, the reconstructed Client Master File yielded the following information:

(1) an average of five yearly unduplicated counts of children (0-17 years of age as of July 1 of each year) associated with the AFDC and/or Medicaid programs (see Appendix 3, page 3.5 and 3.8 for description of this process); and
(2) a total unduplicated count of Food Stamp Program households by household size with no AFDC/Medicaid Program association.[15]

The AFDC/Medicaid counts were arrayed by the following age ranges: 0, 1-4, 5-14, and 15-17. By applying information from the State's Food Stamp Program Quality Control sample to the Food Stamp Program household data, the number of children ages 0-17 participating in the Food Stamp Program was estimated for the same age ranges as above. The two data sets were combined.

The number of children between the ages of 8 days and one year was estimated and added to the total for the 1-4 year category, to obtain the following three age groups: 8 days-4 years, 5-14 years, and 15-17 years.

Denominator data for "Other" (non-low-income) children were obtained by subtracting the counts of Low-Income children from the number of children in the total population. The number of children in the population, by year, was taken from two sources: preliminary intercensal population estimates for Maine were used for the years 1976-1979 (age distribution estimated); and the U.S. Population Census figures for Maine (adjusted to July 1) were used for 1980.

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[15] *It should be noted that Food Stamp Program files do not identify individual persons by name or age, except for the head of household. Therefore, the number of children 0-17 years of age in these households had to be estimated. This was done by using the ongoing monthly Food Stamp Program Quality Control sample which provides information on each household member by age. See also Appendix 3, page App. 3.4.*

Children's Deaths in Maine, 1976-1980 by Cause and Age[16]

Children's Death Rates by Cause

Children's death rates by cause for Maine (1976-1980 average) and the United States (white population, 1978) are presented in Figure 1.[17]

By far the highest death rate occurred as a result of disease-related causes in Maine and the U.S.—56.9 and 69.8 per 100,000 children. The second highest death rate in Maine and the U.S. occurred as a result of accidents—30.8 and 33.4 per 100,000 children. Homicide and suicide were found to be relatively minor causes in both jurisdictions. Maine and U.S. rates for homicide were 1.5 and 2.7, and for suicide, 2.7 and 2.8 per 100,000 children. For all causes of death in each of the five selected cause-of-death groupings, Maine children's death rates appeared to be lower than U.S. rates. The differences between the Maine and U.S. rates for all causes, homicide and disease-related causes were statistically significant.

Maine and U.S. Children's Death Rates by Cause and Age

Children's death rates by cause and age are presented in Figures 2-6.[18]

- For **All Causes of Death** (Figure 2), by far the highest death rate occurred in the under-1-year age group in Maine and in the U.S.—995 and 1,218 per 100,000 children. The next highest death rate from all causes in Maine and the U.S. occurred in the 15-19 year age group—96.1 and 101.8 per 100,000 children.

  Maine children's death rates from all causes appeared to be lower in all age groups than corresponding U.S. rates. The differences between the Maine and U.S. rates for the 0-19 year, the under-1-year and the 1-4 year age groups were statistically significant.

- For the **All Accidents** cause-of-death grouping (Figure 3) by far the highest death rate occurred in the 15-19 year age group for Maine and the U.S.—66.1 and 65.1 per 100,000 children. The next highest Maine rate for all accidents was in the 1-4 year age group—19.3 per 100,000 children. This was not true for the U.S., where the next highest rate was in the under-1-year age group (33.3 per 100,000 children). Maine children's death rates from all accidents for all age groups appeared to be lower than U.S. rates with statistically significant differences in the under-1-year and the 1-4 year age groups.

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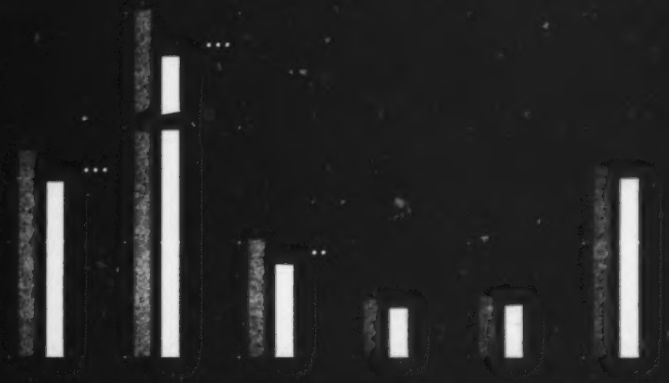
[16] *For information about Maine Children's Death Rates by County of Residence see Appendix 4.*

[17] *See also Appendix 2, pp. App. 2.3 (All data analyses in this section are presented in the form of bar-graphs. Supporting tables indicating number of deaths and rates appear in Appendix 2.)*

[18] *See also Appendix 2, page App.2.4.*

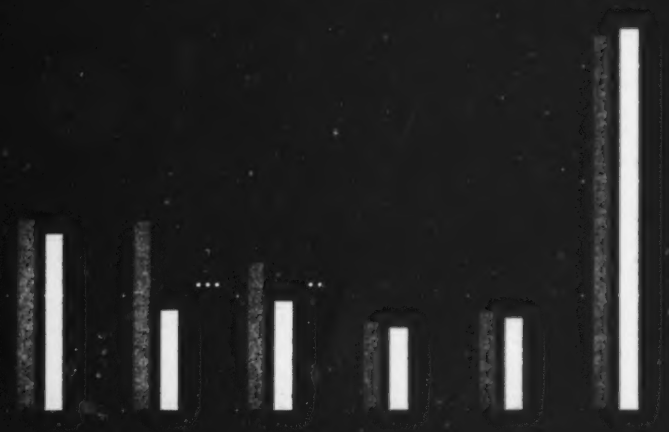
Maine and U.S. Children's Death Rates

BY CAUSE



Maine and U.S. Children's Death Rates

ALL CAUSES BY AGE

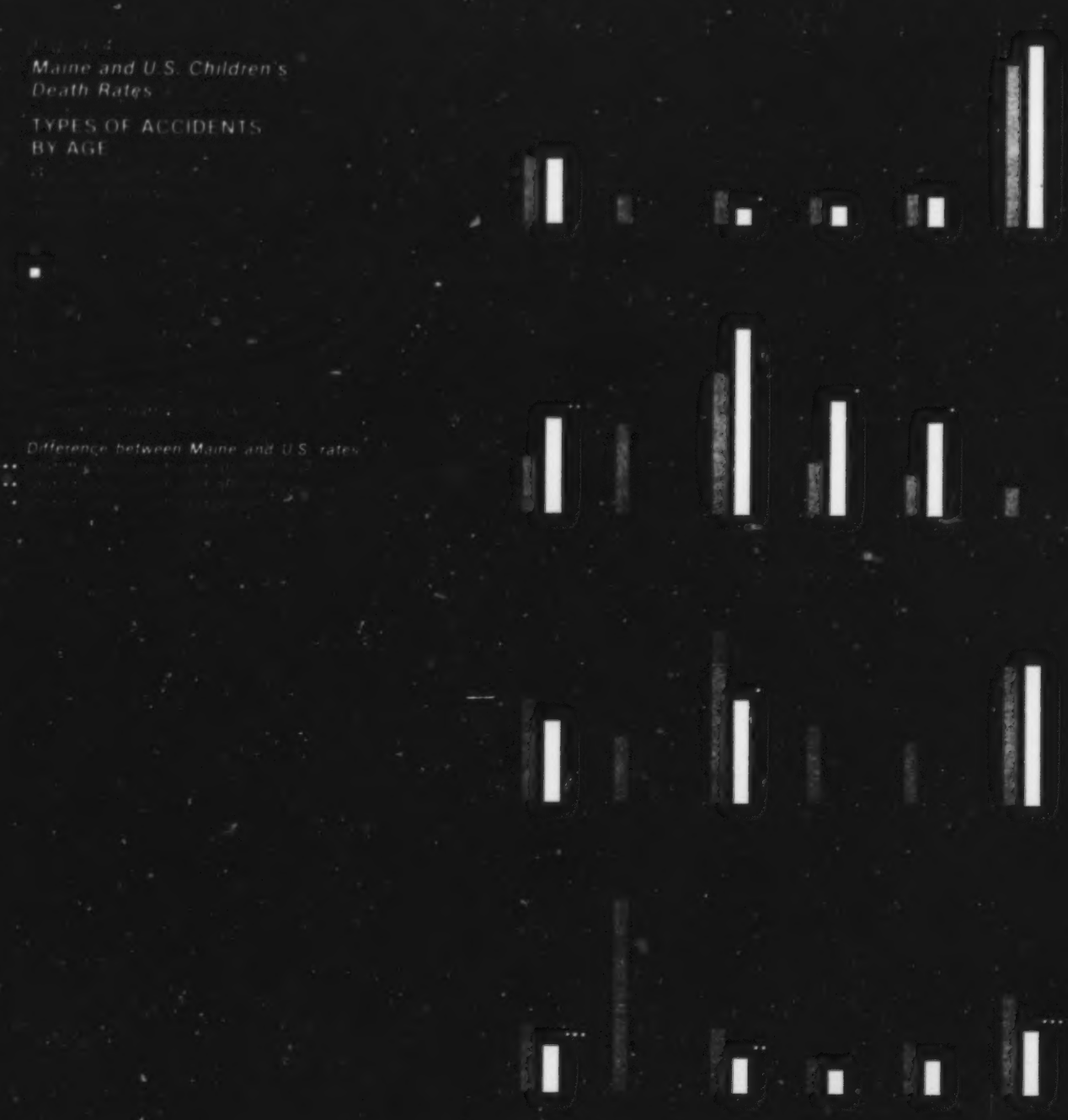


Maine and U.S. Children's Death Rates

ALL ACCIDENTS BY AGE

Maine and U.S. Children's Death Rates

TYPES OF ACCIDENTS BY AGE



Difference between Maine and U.S. rates

A closer look at accidents as a cause of children's death is offered in Figure 4 which shows Maine and U.S. death rates by type of accident.

For **Motor Vehicle Accidents,** the highest death rates were found in the 15-19 year age group, with the Maine rate appearing higher than the U.S. rate—54.1 vs. 49.6 per 100,000 children (difference not statistically significant). The lowest U.S. death rate for Motor Vehicle Accidents was in the under-1-year group—8.0 per 100,000 children. The Maine rate for this age group could not be calculated.[19] Maine children's death rates appeared lower than U.S. rates for children ages one through 14 years. The difference between the Maine and U.S. rates in the 1-4 year age grouping was statistically significant.

For **Accidents Due to Fire,** the highest Maine and U.S. death rates were in the 1-4 year age group, with the Maine rate appearing higher than the U.S. rate—5.8 vs. 4.5 per 100,000 children (difference not statistically significant). The Maine rate for accidents due to fire appeared to be higher than the U.S. rate for all age groups. The differences between the Maine and U.S. rates in the 0-19 year, the 5-9 year, and the 10-14 year age groups were statistically significant.

For **Accidents Due to Drowning,** the Maine rate was highest in the 15-19 year age group—4.2 per 100,000 children. This differs from the U.S. data, where the highest rate occurred in the 1-4 year age group—5.5 per 100,000 children. For age groups 0-19 and 1-4, Maine children's death rates from drowning appeared lower than U.S. rates. The difference between the Maine and U.S. rates in the 1-4 year age group was statistically significant.

For **Accidents Other Than Motor Vehicle, Fire and Drowning,** the highest death rate for Maine was in the 15-19 year age group—6.1 per 100,000 children. This was not true for the U.S., where the highest rate was in the under-1-year age group—20.4 per 100,000 children.
For all age groups, Maine children's death rates in this accident category were lower than the U.S. rates. The differences between Maine and U.S. rates in the 0-19 year, 1-4 year and 15-19 year age groups were statistically significant.

[19] *Rates based on numerators (deaths) less than 10 are subject to large chance fluctuations.*

For **Suicide** (Figure 5), the highest death rates for Maine and the U.S. were in the 15-19 year age group—8.5 and 8.7 per 100,000 children (difference not statistically significant). The other age groups with reported suicide data are ages 5-9 (one death in U.S.; none in Maine) and 10-14 (0.9 deaths per 100,000 children in U.S.; four deaths in Maine).[29]

For **Homicide** (Figure 5), the highest death rate for Maine and the U.S. was in the 15-19 year age group—3.5 and 6.1 per 100,000 children.
Maine children's death rates from Homicide were lower than the U.S. rates for the age groups 0-19 and 15-19, and the differences were statistically significant. (For the other age groups, Maine death rates were not calculated because the number of deaths in each group was below 10.)[29]

For **Disease-Related Causes** (Figure 6), by far the highest death rates for Maine and the U.S. were in the under-1-year age group—972 and 1,179 per 100,000 children.
Maine disease-related children's death rates for all ages appear lower than U.S. rates. The differences between Maine and U.S. rates for the 0-19 year, the under-1-year and the 10-14 year age groups were statistically significant.

In summary, for the period 1976-1980, the highest children's death rates by age groupings in Maine and the U.S. were as follows:

Under 1 year	Disease-Related Causes
1- 4 years	Disease-Related Causes
5- 9 years	All Accidents
10-14 years	All Accidents
15-19 years	All Accidents

In the 0-19 year age group, Maine children's death rates were found to be significantly lower than U.S. rates for All Causes; Accidents other than Motor Vehicle, Fire and Drowning; Homicide; and for Disease-Related Causes.

In the under-1-year age group, Maine children's death rates were found to be significantly lower than U.S. rates for All Causes; All Accidents; and for Disease-Related Causes.

In the 1-4 year age group, Maine children's death rates were found to be significantly lower than U.S. rates for All Causes; All Accidents; Motor Vehicle Accidents; Drowning; and Accidents other than Motor Vehicle, Fire and Drowning.

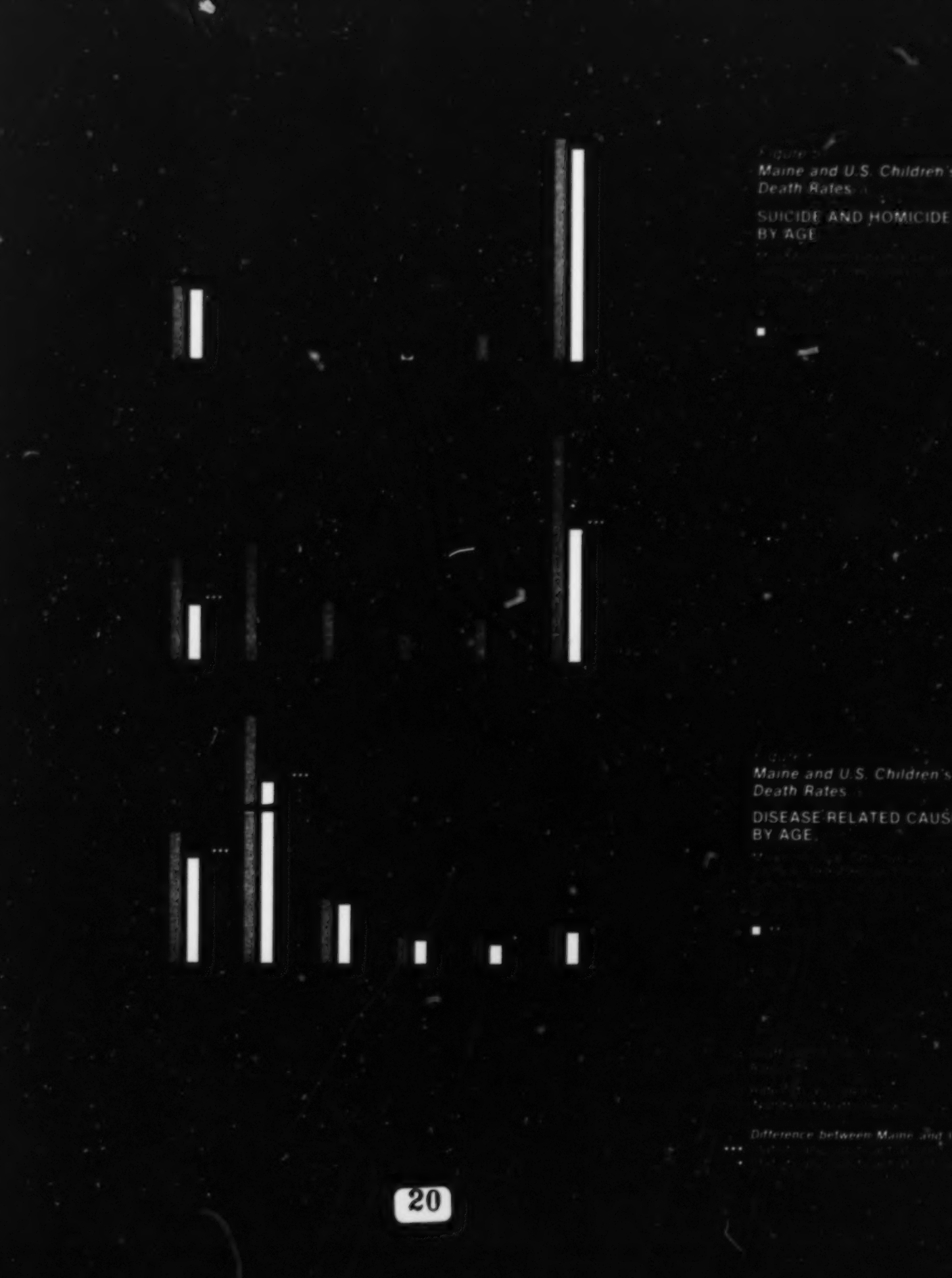
In the 10-14 year age group, Maine children's death rates were found to be significantly lower than U.S. rates for Disease-Related Causes.

In the 15-19 year age group, Maine children's death rates were found to be significantly lower than U.S. rates for Accidents other than Motor Vehicle, Fire and Drowning; and for Homicide.

For Accidental Deaths due to Fire, Maine children's death rates in the 0-19 year, the 5-9 year, and 10-14 year age groups were found to be significantly higher than the corresponding U.S. rates.

The Maine children's death rate for Motor Vehicle Accidents appeared slightly higher than the corresponding U.S. rate; while the Maine children's death rate from Drowning appeared slightly lower than the U.S. rate. Neither of these differences were statistically significant.

[29] *Yearly rates and frequencies for Maine children's deaths caused by homicide and suicide in the period 1970-1981 are presented in Appendix 2, page App. 2.4.*



Maine and U.S. Children's
Death Rates

SUICIDE AND HOMICIDE
BY AGE

Maine and U.S. Children's
Death Rates

DISEASE RELATED CAUS
BY AGE

Difference between Maine and

Distribution of Children's Death in the Low-Income Population in Maine[21]

The figures and tables in this section are based on the point-based death rate, selected because it represents the more restrictive (conservative) definition of low-income status.[22] During the period 1976-1980, 1,038 children ages 8 days-17 years died in Maine. Of the children who died, 438 children were found to be part of the Low-Income children's population,[23] and 600 were found to be part of the Other children's population. These two children's populations, "Low-Income" and "Other", were not equal in size.

		% of Total
Total Maine children, 1980[24]	321,576	100
Low Income children's population, 1980	66,820	21
Other children's population, 1980	254,756	79

In order to compare the number of deaths of children in the two populations, death rates were calculated to take into account the difference in the size of the populations in which these deaths occurred. Since the number of deaths was relatively small when compared to the number of children in each population group, the death rates are shown per 100,000 (instead of 100 or 1,000) children to facilitate the interpretation of the information presented in this section.

Cause-specific death rates for all Maine children, Low-Income children and Other children are shown in Figures 7 and 8 and in Table 1. Figure 7 shows that, for all causes of death, death rates for Low-Income children were much higher than the corresponding rates for Other children. For all causes except homicide and suicide, the differences between the death rates for Low-Income children and Other children are statistically significant at the 0.001 level.

Figure 8 shows that accidental death rates for Low-Income children were much higher than those for Other children. For all accidents, motor vehicle accidents and accidents due to fire and to drowning, the differences between death rates for the two groups are statistically significant at the 0.001 level.

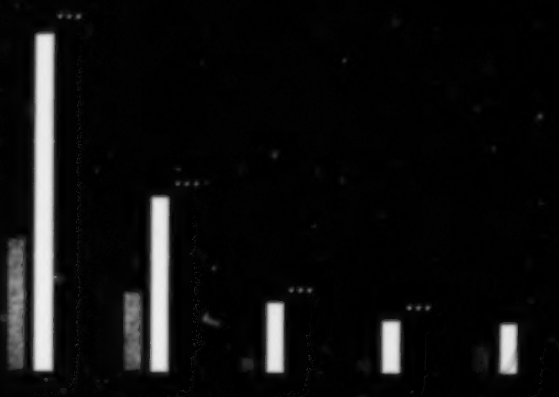
[21] *See also Appendix 3 as referenced throughout this section. (Most of the data analyses in this section are presented in the form of bar-graphs. Supporting tables appear in Appendix 3.)*

[22] *For period-based death rates, see Appendix 3, pp. App. 3.10-3.11 and 3.14-3.15.*

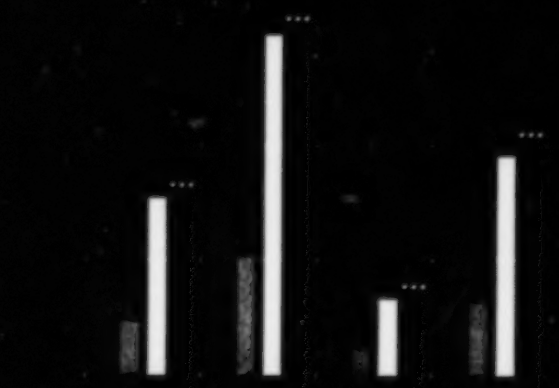
[23] *As defined on page 13 of this report.*

[24] *U.S. Census count for 1980 adjusted to July.*

Maine Children's Cause-Specific Death Rate ... In Total, "Other" and "Low Income" Populations



Maine Children's Cause-Specific Accidental Death Rates ... In Total, "Other" and "Low Income" Populations



Maine Children's Age-Specific Death Rates ... In Total, "Other" and "Low Income" Populations

... Difference between "Low Income" and "Other" rates.

Table 1
Maine Children's Deaths[a] by Cause
Low Income and Other Populations
Five Year Totals and Average Rates: 1976-1980 (Resident Data)

Cause of Death	All Children		Low Income Children		Other Children		Ratio of Low Income to Other Children's Death Rates
	Number	Rate per 100,000	Number	Rate per 100,000	Number	Rate per 100,000	
All Causes###	1,038	62.5	438	139.7	600	44.5	3.1 to 1
All Accidents###	373	22.5	140	44.6	233	17.3	2.6 to 1
Vehicle Related###	(215)	(12.9)	(73)	(23.3)	(142)	(10.5)	(2.2 to 1)
Fire###	(52)	(3.1)	(28)	(8.9)	(24)	(1.8)	(4.9 to 1)
Drowning###	(41)	(2.5)	(20)	(6.4)	(21)	(1.6)	(4.0 to 1)
Other Accidents	(65)	(3.9)	(19)	(6.1)	(46)	(3.4)	(1.8 to 1)
Suicide	26	1.6	7	2.2c	19	1.4	1.6 to 1c
Homicide	20	1.2	11	3.5	9	0.7c	5.0 to 1c
Other External Causes	11	0.7	6	b	5	b	b
Disease-Related Causes###	606	36.6	274	87.4	334	24.8	3.5 to 1
Congenital Anomalies###	(148)	(8.9)	(69)	(22.0)	(79)	(5.9)	(3.7 to 1)
Perinatal Conditions#	(46)	(2.8)	(16)	(5.1)	(30)	(2.2)	(2.3 to 1)
Other Disease-Related###	(414)	(24.9)	(189)	(60.3)	(225)	(16.7)	(3.6 to 1)

aDeaths to children aged 8 days-17 years

bRate not calculated because the numerator was less than 10. Rates based on small numerators are subject to large chance fluctuation.

cFor illustrative purposes only. Numerators too small for a meaningful comparison of rates.

###Difference between Low-Income and Other rates statistically significant at the 0.001 level.

#Significant at the 0.05 level.

Table 2
Maine Children's Deaths by Age
Low Income and Other Populations
Five Year Totals and Average Rates: 1976-1980 (Resident Data)

Age	All Children		Low Income Children		Other Children		Ratio of Low Income to Other Children's Death Rates
	Number	Rate per 100,000	Number	Rate per 100,000	Number	Rate per 100,000	
8 days-17 years###	1,038	62.5	438	139.7	600	44.5	3.1 to 1
8 days-4 years###	521	134.2	242	266.2	279	93.6	2.9 to 1
5-14 years###	268	28.3	112	63.8	156	20.2	3.2 to 1
15-17 years###	249	75.4	84	175.8	165	59.3	3.0 to 1

###Difference between Low-Income and Other rates statistically significant at the 0.001 level.

Age-specific death rates for all Maine children, Low-Income children and Other children are shown in Figure 9 and in Table 2. Figure 9 shows that, in all age groups, death rates for Low-Income children were much higher than the corresponding rates for Other children. The differences between the death rates for Low-Income children and Other children for all age groups are statistically significant at the 0.001 level.

Taken together, the data presented in Tables 1 and 2 and Figures 7, 8 and 9 indicate that during the period 1976-1980, Maine death rates for Low-Income children were found to be substantially higher[25] than the corresponding rates for Other children for all causes except suicide and for all ages. The ratios of the death rates of Low-Income children to those of the Other children, by cause of death and by age, were found to be as follows:

Causes of Death	Ratios
All Causes	3.1 to 1
All Accidents	2.6 to 1
Motor Vehicle	2.2 to 1
Fire	4.9 to 1
Drowning	4.0 to 1
Other Accidents	1.8 to 1
Suicide[26]	1.0 to 1.6
Homicide[26]	5.0 to 1
Disease-Related Causes	3.5 to 1
Congenital Anomalies	3.7 to 1
Perinatal Conditions	2.3 to 1
Other Disease-Related	3.6 to 1

Age Groups	
8 days-4 years	2.9 to 1
5-14 years	3.2 to 1
15-17 years	3.0 to 1

[25]The differences in death rates were found to be statistically significant for all age groups and all causes except homicide and suicide. The small number of deaths (under 10) in the Low-Income or the Other populations from these two causes precluded the calculation of death rates for use in test of statistical significance.

[26]Ratio included for illustrative purposes only.

ERRATA

The first sentence, second paragraph should read: "Taken together, the data presented in Tables 1 and 2 and Figures 7, 8 and 9 indicate that during the period 1976-1980, Maine death rates for low-income children were found to be substantially higher[25] than the corresponding rates for other children for all causes except suicide and homocide and for all ages."

The suicide ratio in the table "Causes of Death" should read: "Suicide[26] 1.6 to 1."

Afterword

We have deliberately omitted discussion of our results. We are confident of our methodology and believe that, to a large extent, the results speak for themselves.

A variety of possible follow-up studies are suggested by our findings. Some morbidity studies have already been done elsewhere and corroborate our work. Similar studies could be accomplished in Maine. Maine's 100% computerized hospital discharge file provides the capability of analyzing any diagnostic code against source of payment. Various public health screening programs are carried out for lead poisoning, anemia and other indicators of illness; by requesting financial information at the time of screening, a correlation of poverty with presence of the illness might be accomplished. Since all birth certificates are filed within the Department, an analysis of some birth defects could be done with respect to income, marital status of parents or utilization of prenatal care.

A retrospective case-control analysis of children who died would be extremely interesting. Although poverty is certainly associated with an increased risk of dying, obviously there were many Low-Income children who did not die. A retrospective analysis might reveal other factors associated with death, such as certain parental attitudes or behaviors, lack of routine well-child care, etc. A retrospective study could include Low-Income as well as Non-Low-Income children, with controls matched for age, sex and income.

The two approaches utilized here (point-based and period-based death rates) could be combined into an analysis of child-years at risk. This method would determine how many months or years each child spent on a Departmental program over the five-year period. The greater the number of cumulative months, presumably the greater the risk. Although such a study would be somewhat more elegant than our current approach, it would be extremely laborious and probably would provide little additional useful information.

Such a large proportion of childhood deaths occurred very early in life that a detailed examination of the perinatal period is certainly warranted. While many medical studies have defined the pregnant woman who is at high medical risk (diabetic, hypertensive, etc.) and some studies have attempted to define social conditions that produce high risk infants, very few of these studies have been translated into public policy, which would prevent the large number of perinatal deaths.

We are of the greatest hope that Maine's Child Death Study will become just one stepping-stone in a continuing process which attempts to alleviate morbidity and mortality among children.

1.1
Appendix

Appendix 1

Methodological Differences Between Preliminary (August, 1982 and Final Report

The Study "Children's Deaths in Maine 1976-1980" was initiated in June 1982. A report based on preliminary findings was completed in August, 1982. Shortly after the distribution of the preliminary report, several problems of data collection and analysis were identified. These problems, and their resolution, are described below in some detail for the information of those who may wish to compare the preliminary and the final reports. Also described are a number of refinements in data collection and analysis procedures made possible by the availability of additional resources and a more favorable time-frame.

I. Organizational Problems

The study was initiated by the Commissioner of the State's Department of Human Services which encompasses, in four separate bureaus, the State's official health agency, social service agency, health statistics agency and data processing facility. When the study was initiated in June 1982, the staffs of the four bureaus had had little history of cooperative data collection and analysis work, nor were they able to communicate in a common scientific/technical language. A literature search revealed no blueprint for designing the study, and the time-frame set for its **preliminary phase** did not facilitate the over-all learning process involved in a novel undertaking. During the following seven months, the **final phase** of the study, the organizational problems were resolved primarily through the appointment of a coordinator reporting directly to the Commissioner. The coordinator was empowered to mobilize the necessary resources, and mediate the inevitable misunderstandings among Bureaus, to facilitate the correction of the methodological flaws and the completion of the study.

II. "Apples and Oranges" Problem

During the study's preliminary phase, a serious error was made in comparing deaths among "Low-Income" and "Other" children. In calculating "Low-Income" death rates the following fraction was used:

$$\frac{\text{Number of deaths to children who were program participants in 1976-1980}}{\text{Number of children who were program participants on a particular day}}$$

(Numerator) / (Denominator)

The numerator and the denominator above are not comparable. A period prevalence was divided by a point prevalence—apples by oranges. The correct fractions for calculating "Low-Income" death rates, used in the final phase of the study, are:

point-based fraction

$$\frac{\text{Average number of deaths (1976-1980) to children in age group who were program participants at time of death}}{\text{Average number (1976-1980) of low income children in age group on any given day during the five-year period}}$$

(Numerator) / (Denominator)

period-based fraction

$$\frac{\text{Average number of deaths (1976-1980) to children in age group who were program participants during twelve months preceding death}}{\text{Average annual unduplicated count (1976-1980) of Low-Income children in age group}}$$

(Numerator)

(Denominator)

In order to calculate the death rates using these fractions a substantial data collection effort was undertaken to assemble the necessary numerators and denominators. This effort is described in the Methodological Summary and Appendix 3 of this report.

III. Numerator Problems and Adjustments

A. Death Data

1. Numerator data for the calculation of death rates for all the children in the State were available in a computerized "death file". During the study's final phase, the following errors in this file were identified and corrected:
   a. In the preliminary phase, 1,734 Maine children ages 0-19 years were used in the Maine-U.S. comparison. In the final phase, three deaths which had been omitted previously because their exact ages were unknown were assigned to appropriate age categories, raising the total number of deaths to 1,737.
   b. One death with unknown county of residence in the preliminary phase was assigned to its appropriate place in the final phase.
2. Cause of Death Coding
   a. In the preliminary phase, cause of death data were classified by staff unfamiliar with the use of the ICD code numbers assigned on the death certificates by the nosologists (vital records coders). As a result, a substantial number of deaths were placed in the wrong diagnostic groupings. ICD codes only were used for classification during the final study phase.
   b. In the preliminary phase, "Other External Causes"[27] were included under "Disease-Related Causes" of death. In the final phase they were placed in their own major category.
   c. In the preliminary phase, one of the infants under 8 days was incorrectly coded as having died from a pregnancy-related cause. In the final phase this death was classified under perinatal conditions.

B. "Low-Income" Children's Data

1. During the preliminary phase, the number of children's deaths in the "Low-Income" category was substantially undercounted because all the deaths for the period 1976-1980 were checked against program files which are purged periodically. During the final phase a Client Master File[28] for the period was reconstructed and all deaths were compared with it to identify the "Low-Income" deaths.

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[27] *Other injuries, undetermined whether accidentally or purposely inflicted.*

[28] *See Appendix 3, page App. 3.4*

2. The definition of Low-Income status used in the preliminary phase was changed in the final phase as follows:
   a. Participation in the AFDC, Medicaid and Food Stamp programs only determines Low-Income status. "Protective Care" was excluded as a category of participation.
   b. The time frame for participation in the programs was narrowed down to the following:
      (1) participation at time of death (point-based analysis) and
      (2) participation within one year prior to death (period-based analysis).

IV. Denominator Problems and Adjustments

A. Estimates of "Low-Income" Population

During the preliminary phase of the study, a rough estimate of Maine children in the Low-Income population was used. This was essentially an estimate of children (Social Service Recipients, AFDC Recipients and Food Stamp Recipients) participating in the specified programs as of March 15, 1980.
During the final phase of the study, unduplicated counts by age of all children served by the three programs during the period 1976-1980 were obtained by a computer search of the "history" files for two programs (AFDC and Medicaid) and were estimated for the Food Stamp program (for the period-based rate).[29]
Periodic reports of all persons participating in the three programs were used to derive annual averages 1976-1980 of month-by-month unduplicated counts of children who participated in at least one of the programs; these data were then distributed by age and aggregated into age groups (for the point-based rate).
Besides yielding more solidly-based denominators for the calculations of the death rates, the work described above made it possible, in the final study phase, to compare "Low-Income" and "Other" children's death rates by age, in addition to cause, of death.

B. Population Estimates and Projections

The Maine population estimates (1976-1978) and projection (1979) used in the preliminary phase were based on the 1970 Census. In the final phase the projection was replaced by an estimate, and all four years were adjusted to reflect the results of the 1980 Census.

V. Change in Test of Statistical Significance

In the preliminary phase, the Chi-square test, based on the binomial distribution, was used to examine the significance of the differences between the low-income and other death rates. In the final phase a test based on the Poisson distribution was used because this test is deemed to be particularly suitable for use with data descriptive of "rare events" such as the deaths studied here.

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[29] *See Appendix 3, page App. 3.4.*

Disease-Related Causes of Death[a]
Maine (Five-Year Total, 1976-1980)
(Resident Data)

Cause of Death	Number of Cases
Congenital Anomalies (e.g., anencephalus, 17 cases; spina bifida, 9 cases; congenital anomalies of the heart, 113 cases; etc.)	267
Perinatal Conditions (e.g., short gestation and low birthweight, 66 cases; etc.)	333
Infective and Parasitic Diseases (e.g., septicemia, 18 cases; meningococcal infection, 7 cases; etc.)	45
Neoplasms (malignant neoplasm of bone, connective tissue, skin and breast, 13 cases; malignant neoplasm of genitourinary organs, 6 cases; malignant neoplasm of lymphatic and hematopoietic tissue, 39 cases; etc.)	83
Endocrine, Nutritional and Metabolic Diseases (e.g., Diabetes mellitus, 1 case; etc.)	21
Diseases of Blood and Blood-forming Organs, (e.g., iron deficiency anemias, 1 case) hereditary hemolytic anemias, 1 case; etc.)	6
Mental Disorders (e.g., Alcoholism, 1 case)	1
Diseases of the Nervous System and Sense Organs (e.g., meningitis, 13 cases; etc.)	55
Diseases of the Circulatory System (e.g. cardiomyopathy, 6 cases) etc.)	44
Diseases of the Respiratory System (e.g., pneumonia, 43 cases; etc.)	56
Diseases of the Digestive System (e.g., hernia of abdominal cavity, 4 cases; intestinal obstruction without mention of hernia, 3 cases; etc.)	15
Diseases of the Genitourinary System (e.g., nephrotic syndrome, 1 case; infections of kidney, 1 case; other diseases of kidney and ureter, 1 case; unspecified ovarian cyst, 1 case)	4
Diseases of the Skin and Subcutaneous Tissue (e.g., other cellulitis and abscess, 1 case)	1
Diseases of the Musculoskeletal System and Connective Tissue (e.g., systemic lupus erythematosus, 1 case)	1
Symptoms and Ill-defined Conditions (e.g., sudden death—cause unknown, 130 cases; etc.)	136
TOTAL	1,068

[a]Deaths to children aged 0-19 years.

2.2 Appendix

Maine Population by Race
1980

Race	Number	Percent
All Races	1,124,660[a]	100.0
White	1,109,850	98.7
Black	3,128	0.3
American Indian, Eskimo, and Aleut	4,087	0.4
Asian and Pacific Islander	2,947	0.3
Other	4,648	0.4

[a]Subsequent to the publication of the **Final Population and Housing Unit Counts** (Advance Reports), the Bureau of the Census increased Maine's total 1980 population count to 1,125,027. Of the additional 367 people, 349 resided in Franklin County. The remainder represents an adjustment to the Somerset County total.

Source:
Data—**1980 Census of Population and Housing, United States Summary: Final Population and Housing Unit Counts (Advance Reports)**, U.S. Department of Commerce, Bureau of the Census.

Percentages calculated by the Maine Department of Human Services, August, 1980.

Childhood Age-Specific Death Rates[a] by Cause of Death
United States (All Races), 1978

Cause of Death	Age					
	0-19 years	<1 year	1-4 years	5-9 years	10-14 years	15-19 years
All Causes	121.9	1,434.4	69.2	33.4	34.3	100.9
All Accidents	32.9	39.4	28.8	16.8	17.6	60.7
Motor Vehicle	(19.7)	(8.2)	(10.6)	(8.6)	(9.0)	(45.1)
Fire	(2.3)	(4.8)	(6.1)	(2.1)	(1.2)	(0.9)
Drowning	(3.6)	(2.0)	(5.1)	(2.6)	(2.7)	(4.7)
All Other	(7.3)	(24.3)	(7.0)	(3.5)	(4.7)	(10.1)
Suicide	2.6	n.a.	n.a.	b	0.8	8.0
Homicide	3.9	5.0	2.6	1.0	1.5	8.9
Other External Causes	0.9	2.6	0.9	0.2	0.4	1.5
Disease-Related Causes	81.6	1,387.4	36.9	15.4	14.0	21.8
Congenital Anomalies	(14.5)	(262.4)	(8.4)	(2.1)	(1.6)	(1.8)
Perinatal Conditions	(30.6)	(686.5)	(0.2)	(b)	(b)	(b)
Other Disease-Related	(36.5)	(438.5)	(28.3)	(13.3)	(12.4)	(20.0)

NOTE: n.a. = not applicable.

[a]Deaths per 100,000 children.

[b]Rate not calculated because the numerator was less than 10. Rates based on small numerators are subject to large chance fluctuation.

Maine and U.S.
Children's Death Rates[a] by Cause
Maine Resident Data, 1976-1980 (5-year average)
and U.S. White Data (1978)

Cause of Death	Death Rate	
	Maine	U.S.
All Causes ###	92.5	110.4
All Accidents	30.8	33.4
Motor Vehicle	(20.9)	(21.1)
Fire##	(3.0)	(1.8)
Drowning	(2.6)	(3.3)
All Other###	(4.3)	(7.2)
Suicide	2.7	2.8
Homicide###	1.5	2.7
Other External Causes###	0.6	1.7
Disease-Related Causes###	56.9	69.8
Congenital Anomalies	(14.2)	(14.2)
Perinatal Conditions###	(17.7)	(25.1)
Other Disease-Related###	(24.9)	(30.5)

Difference between Maine and U.S. rates statistically significant at the 0.001 level.
Significant at the 0.01 level.

[a]Deaths per 100,000 children aged 0-19 years.

Deaths to Maine Children by Cause and Age
Resident Data, 1976-1980 (5-year total)

Cause of Death	Number of Deaths by Age Group					
	0-19 years	Under 1 year	1-4 years	5-9 years	10-14 years	15-19 years
All Causes	1,737	787	161	124	144	521
All Accidents	578	14	60	64	82	358
Motor Vehicle	(392)	(3)	(21)	(31)	(44)	(293)
Fire	(57)	(1)	(18)	(15)	(14)	(9)
Drowning	(49)	(1)	(10)	(8)	(7)	(23)
All Other	(80)	(9)	(11)	(10)	(17)	(33)
Suicide	50	n.a.	n.a.	0	4	46
Homicide	29	2	3	1	4	19
Other External Causes	12	2	1	2	3	4
Disease-Related Causes	1,068	769	97	57	51	94
Congenital Anomalies	(267)	(209)	(28)	(12)	(8)	(10)
Perinatal Conditions	(333)	(333)	(0)	(0)	(0)	(0)
Other Disease-Related	(468)	(227)	(69)	(45)	(43)	(84)

NOTE: n.a. = not applicable.

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2.4
Appendix

Children's Death Rates[a] by Cause of Death and Age
Maine Resident Data, 1976-1980 (5-year average) and U.S. White Data (1978)

Cause of Death	Maine and U.S. Death Rates by Age Group											
	0-19 years		Under 1 year		1-4 years		5-9 years		10-14 years		15-19 years	
	ME.	U.S.	ME.	U.S.	ME.	U.S.	ME.	U.S.	ME.	U.S.	ME.	U.S.
All Causes	92.5###	110.4	995.6###	1,218.3	51.8#	62.7	28.1	31.4	28.6	33.0	96.1	101.8
All Accidents	30.8	33.4	17.7###	33.3	19.3##	26.2	14.5	15.7	16.3	17.4	66.1	65.1
Motor Vehicle	(20.9)	(21.1)	(b)	(8.0)	6.8#	(9.9)	(7.0)	(8.3)	(8.7)	(9.5)	(54.1)	(49.6)
Fire	(3.0)##	(1.8)	(b)	(2.8)	6.8)	(4.5)	(3.4)#	(1.6)	(2.8)#	(1.1)	(b)	(0.8)
Drowning	(2.6)	(3.3)	(b)	(2.1)	(3.2)#	(5.5)	(b)	(2.4)	(b)	(1.9)	(4.2)	(4.2)
All Other	(4.3)###	(7.2)	(b)	(20.4)	(3.5)##	(6.3)	(2.3)	(3.5)	(3.4)	(4.9)	(6.1)###	(10.5)
Suicide	2.7	2.8	n.a.		n.a.		b	b	b	0.9	8.5	8.7
Homicide	1.5###	2.7	b	3.6	b	1.6	b	0.7	b	1.2	3.5###	6.1
Other External Causes	0.6###	1.7	b	1.8	b	0.6	b	0.1	b	0.3	b	1.5
Disease-Related Causes	56.9###	69.8	972.9###	1,179.6	31.2	34.3	12.9	14.9	10.1#	13.2	17.3	20.4
Congenital Anomalies	(14.2)	(14.2)	(264.4)	(258.3)	(9.0)	(8.4)	(2.7)	(2.0)	(b)	(1.6)	(1.8)	(1.8)
Perinatal Conditions	(17.7)###	(25.1)	(421.3)###	(567.2)	(b)	(0.2)	(b)	(b)	(b)	(b)	(b)	(b)
Other Disease-Related	(24.9)###	(30.5)	(287.2)###	(354.1)	(22.2)	(25.7)	(10.2)	(12.9)	(8.5)##	(11.6)	(15.5)	(18.6)

NOTE: n.a. = not applicable.

[a]Deaths per 100,000 children aged 0-19 years.

[b]Rate not calculated because the numerator was less than 10. Rates based on small frequencies are subject to large chance fluctuation.

Difference between Maine and U.S. rates statistically significant at the 0.001 level.
Significant at the 0.01 level.
Significant at the 0.05 level.

Deaths to Children Aged 0-17 Years by Homicide and Suicide
Maine, 1970-1981 (Resident Data)

Cause of Death	Year											
	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Homicides												
Frequency	3	3	6	7	0	2	7	2	3	3	5	6
Rate[a]	0.87	0.85	1.69	1.98	0	0.58	2.03	0.59	0.91	0.91	1.55	1.92
Suicides												
Frequency	2	4	9	5	1	4	1	5	4	9	7	8
Rate[a]	0.58	1.13	2.53	1.41	0.29	1.16	0.29	1.49	1.21	2.73	2.17	2.56

NOTE: These rates are based on small numerators and thus subject to large chance fluctuation. They should be interpreted with caution.

[a]Deaths per 100,000 children aged 0-17 years.

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Distribution of Children's Deaths in the Low-Income Population in Maine

I. Additional Information—Methodology

A. The **period 1976-1980 was selected** for the study for three major reasons:

1. no major changes in the eligibility criteria for the three programs determining "Low-Income" status of the study population were made during the five years in question. The variability in numbers of children participating each year was relatively small. (See Table C on pp. App. 3.12);
2. at the time that the preliminary study was initiated, 1976-1980 was the most recent five-year period for which death certificates were available for analysis; and
3. fully computerized client files were available for the period.

It should be pointed out here that "stability" of the population participating in the three Maine programs cannot be assured for any year after 1981, because of substantial and continuing changes in eligibility criteria of all three programs from 1981 to the present.

B. The basic **eligibility criteria** for the Maine AFDC, Food Stamp and Medicaid progams are as follows:

1. *Basic AFDC Program Eligibility Criteria*

In order to receive benefits in the Aid to Families with Dependent Children Program, the family must meet two major criteria:

a. There must be a child under age 18 who is deprived of parental support or care by reason of the death, continued absence from the home or physical or mental incapacity of a legal parent; and
b. The family's available income resources do not exceed the State's need standard, currently calculated at $564 per month for a family of four. Payment maximums are based on 72.5% of maximum need or $408 per month for a family of four.

2. *Basic Food Stamp Eligibility Criteria*

In order to be eligible for Food Stamps, an individual or family must meet certain income level tests. First, the applicant's income must fall below a gross monthly amount, adjusted for family size; then after specific deductions are allowed for such things as rent and medical expenses, the applicant's income must fall below a specified net income level, again adjusted for family size. For example, if a family of four had a monthly gross income of less than $1,008.00 (the gross maximum monthly income allowed) and qualified for all appropriate deductions to give them a net income of $626.00 per month, they would be eligible for $65.00 per month in food stamps.

3. *Basic Medical Assistance Eligibility Criteria*

a. Automatic Eligibility
All recipients of AFDC or SSI are automatically covered by the Medicaid program. As long as they receive an AFDC or SSI payment, they continue to be covered by the Medicaid Program.

3.2 Appendix

b. **Eligibility of Families and Children**
Individuals under age 21 and low income families with children under the age of 18 or 19 (if the student will complete his program of education before his 19th birthday) may qualify for Medical Assistance provided:

(1) One parent is absent from the home (death, desertion, divorce, separation, incarceration), or one of the parents is disabled or unemployed for over thirty days. If not, only the children, not the parents may be included for medical coverage.

(2) Their cashable resources (bank accounts, real property—not the home, equity value of one vehicle over $1,500, all other vehicles, income producing property) are worth less than $1,000 for regular Medicaid or a higher amount depending on the family's size for the Medically Needy Program ($2,250 for two, plus $100 for each additional family member).

(3) Their monthly **net** income (gross income minus taxes, work-related expenses and other allowances) is less than the amounts listed below.

Medicaid

1[30]	$121	6	$ 794
2	332	7	909
3	448	8	1,024
4	564	9	1,139
5	679	10	1,254

(plus $115 for each additional member)

Medically Needy

1[30]	$270	6	$ 766
2	325	7	883
3	433	8	991
4	550	9	1,100
5	667	10	1,208

(plus $108 for each additional member)

c. *Over-Income Medically Needy Applicants*

Aged, blind or disabled persons, families with children, and individuals under 21 whose income is higher than the appropriate Medically Needy standard may still be eligible provided their medical costs are in excess of the difference between their net income and the appropriate standard. Such applicants are responsible for the excess and the Medically Needy program pays for any other covered medical services for the remmainder of the 6-month period of eligibility.

C. The **estimate that approximately 90 percent of Maine children below 125 percent of the Federal Poverty Level** were served by these three programs in 1980 was derived as follows:

a. 1980 Maine population below poverty	140,996
b. 1980 Maine children under 18 below poverty b. is 35.36% of a.	49,864
c. 1980 Maine population below 125% poverty	210,028
d. 1980 Maine children under 18 below 125% poverty— 210,028 X 35.56	74,300
e. 1980 Maine children under 18 served by DHS e. is 90% of d.	66,894
f. Percent of Maine children below 125% poverty served by DHS, 1980	90%

[30]*Size of assistance group.*

Two questions have been raised about the 125% poverty status of the "low-income" children in the study population:

a. Does the Food Stamp Program segment of the study population contain a sizeable number of children above 125% poverty status? When this matter was explored further, 1980 Census information for Maine revealed that the income of a family of four below 125% of poverty in Maine was $9,265 yearly; and that the 1980 income levels of the Food Stamp population in Maine were as follows:

modal income (34% pop.)	$2,400 to $3,500 yearly.
median income (50% pop.)	$3,516 yearly.
highest income (13% pop.)	$7,200 yearly.

This information appears to strengthen the concept that, in general, Food Stamp clients in Maine (including children) are under 125% poverty.

b. Does the Medical Assistance Program segment of the study population contain a significant number of children whose families are above 125% poverty status and who participated in the program by virtue of the "Over Income Medically Needy" feature of the program?
The methodology used to assemble the numerators and denominators during the final phase of the study did not allow for the identification of such children. This question should be considered as a subject for further study.

D. Children Seven-Days-Old-and-Under Eliminated from Study Population

1. Causes of Death	Number
Infective and parasitic diseases	12
Diseases of the nervous system and sense organs	1
Diseases of the circulatory system	1
Diseases of the respiratory system	2
Diseases of the digestive system	2
Congenital anomalies	119
Conditions originating in the perinatal period	287
Symptoms and ill-defined conditions	2
Total	426

2. Department of Human Services (DHS) Program Status

Year	Known To DHS	Not Known to DHS	Total
1976	20	79	99
1977	28	63	89
1978	27	52	79
1979	25	50	75
1980	34	50	84
Totals	132	294	426

3. Method Used to Eliminate Children Seven-Days-and-Under from Denominators

There was no ready way of obtaining the actual dates of birth of every child in the denominator populations. Using the assumption that births are equally distributed throughout the year in a given population, one would expect that approximately 1/52 or 1.92% of the number of children under one year of age would also be less than 8 days old. Therefore in each denominator population under consideration the number of children less than one year old was reduced by 1.92%.

E. Sample Data Form and Description of Client Master File used for Derivation of AFDC/Medicaid Denominator for Period-Based Rate

A copy of the data form used to pre-print and record numerator data appears on the following two pages.

The Maine Department of Human Services Data Processing System is based on use of an integrated client master file in which a single, consolidated record is maintained for each recipient of services provided by the Department. The System includes edits to prevent—as much as possible—the establishment of more than one record per individual. For individuals eligible for Medicaid, records are maintained on the files for at least two years after eligibility no longer exists; thus a continuous record history is maintained. Copies of these files have been maintained for historical purposes.

A computer search of the history tapes (back-up copies of the file described above) was performed to identify individuals who during each designated year:

a. were age 0-17 as of July in year;
b. were AFDC clients; and
c. were Medicaid clients not on AFDC.

Separate tapes were made listing these individuals for each designated year, as well as counts by age group. The yearly unduplicated counts were averaged.

F. Estimate of Children Participating in Food Stamp Program

The number of children aged 0-17 who were eligible for the Food Stamp (FS) program but were not on Medicaid or AFDC, for each year 1976-1980, were estimated by age. The estimates were derived from the unduplicated counts of persons on the Food Stamp Program by applying the children-to-person ratio obtained by tabulation of the April-September 1981 Food Stamp Quality Control Program Sample (QC Sample) data. For example:

$$\text{No. children ages 1-4 on FS but not on AFDC or Medicaid} = \text{No. persons on FS but not on AFDC or Medicaid} \times \frac{\text{No. children ages 1-4 in QC Sample on FS but not on AFDC or Medicaid}}{\text{No. persons in QC Sample on FS but not on AFDC or Medicaid}}$$

MAINE DEPARTMENT OF HUMAN SERVICES

CHILDREN'S DEATH STUDY

CHILD INDICATIVE INFORMATION

1. CHILD NAME (LAST,FIRST,I)	2. CHILD BIRTHDATE MO/DA/YR	3. AGE AT DEATH	4. SOCIAL SECURITY #
5. SEX M-MALE F-FEMALE ☐	6. RESIDENCE COUNTY/TOWN	7. CHILD DEATHDATE MO/DA/YR	8. CAUSE DEATH	9. DEATH CERTIFICATE YEAR NUMBER

AFDC

10. CASE #	START DATE MO/YR	END DATE MO/YR	11. CASE #	START DATE MO/YR	END DATE MO/YR
12. CASE #	START DATE MO/YR	END DATE MO/YR	13. CASE #	START DATE MO/YR	END DATE MO/YR

DISCREPANCY ITEMS

MEDICAL ASSISTANCE

14. CASE #	START DATE MO/YR	END DATE MO/YR	START DATE MO/YR	END DATE MO/YR	START DATE MO/YR	END DATE MO/YR	START DATE MO/YR	END DATE MO/YR
	START DATE MO/YR	END DATE MO/YR	START DATE MO/YR	END DATE MO/YR	START DATE MO/YR	END DATE MO/YR	START DATE MO/YR	END DATE MO/YR
15. SPEND DOWN	START DATE MO/YR	END DATE MO/YR	START DATE MO/YR	END DATE MO/YR	START DATE MO/YR	END DATE MO/YR	START DATE MO/YR	END DATE MO/YR

LAST UPDATED

16. CONTROL	17. PROG. OBJ.	18. SOURCE	19. INDICATIVE DATE	20. OLD CLIENT ID	21. OLD CLIENT ID DATE

FATHER INDICATIVE INFORMATION

22. FATHER NAME (LAST,FIRST,I)	23. FATHER BIRTHDATE MO/DA/YR	24. RESIDENCE COUNTY/TOWN	25. SOCIAL SECURITY #

AFDC

26. CASE #	START DATE MO/YR	END DATE MO/YR	27. CASE #	START DATE MO/YR	END DATE MO/YR
28. CASE #	START DATE MO/YR	END DATE MO/YR	29. CASE #	START DATE MO/YR	END DATE MO/YR

MEDICAL ASSISTANCE

30. CASE #	START DATE MO/YR	END DATE MO/YR	START DATE MO/YR	END DATE MO/YR	START DATE MO/YR	END DATE MO/YR	START DATE MO/YR	END DATE MO/YR
	START DATE MO/YR	END DATE MO/YR	START DATE MO/YR	END DATE MO/YR	START DATE MO/YR	END DATE MO/YR	START DATE MO/YR	END DATE MO/YR
31. SPEND DOWN	START DATE MO/YR	END DATE MO/YR	START DATE MO/YR	END DATE MO/YR	START DATE MO/YR	END DATE MO/YR	START DATE MO/YR	END DATE MO/YR

LAST UPDATED

32. CONTROL	33. PROG. OBJ.	34. SOURCE	35. INDICATIVE DATE	36. OLD CLIENT ID	37. OLD CLIENT ID DATE

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MOTHER INDICATIVE INFORMATION

38. MOTHER NAME (LAST,FIRST,I)	39. MOTHER BIRTHDATE MO/DA/YR	40. RESIDENCE COUNTY/TOWN	41. SOCIAL SECURITY #

42. MOTHER MAIDEN NAME (LAST,FIRST,I)	43. MOTHER OTHER NAME (LAST,FIRST,I)
44. MOTHER OTHER NAME (LAST,FIRST,I)	45. MOTHER OTHER NAME (LAST,FIRST,I)

AFDC

46. CASE #	START DATE MO/YR	END DATE MO/YR	47. CASE #	START DATE MO/YR	END DATE MO/YR
48. CASE #	START DATE MO/YR	END DATE MO/YR	49. CASE #	START DATE MO/YR	END DATE MO/YR

MEDICAL ASSISTANCE

50. CASE #	START DATE MO YR	END DATE MO YR	START DATE MO YR	END DATE MO YR	START DATE MO YR	END DATE MO YR	START DATE MO YR	END DATE MO YR
	START DATE MO YR	END DATE MO YR	START DATE MO YR	END DATE MO YR	START DATE MO YR	END DATE MO YR	START DATE MO YR	END DATE MO YR
51. SPEND DOWN	START DATE MO YR	END DATE MO YR	START DATE MO YR	END DATE MO YR	START DATE MO YR	END DATE MO YR	START DATE MO YR	END DATE MO YR

LAST UPDATED

52. CONTROL	53. PROG. OBJ.	54. SOURCE	55. INDICATIVE DATE	56. OLD CLIENT ID	57. OLD CLIENT ID DATE

CARETAKER INDICATIVE INFORMATION

58. CARETAKER NAME (LAST,FIRST,I)	59. CARETAKER BIRTHDATE MO/DA/YR	60. RESIDENCE COUNTY/TOWN	61. SOCIAL SECURITY #

AFDC

62. CASE #	START DATE MO/YR	END DATE MO/YR	63. CASE #	START DATE MO/YR	END DATE MO/YR
64. CASE #	START DATE MO/YR	END DATE MO/YR	65. CASE #	START DATE MO/YR	END DATE MO/YR

MEDICAL ASSISTANCE

66. CASE #	START DATE MO YR	END DATE MO YR	START DATE MO YR	END DATE MO YR	START DATE MO YR	END DATE MO YR	START DATE MO YR	END DATE MO YR
	START DATE MO YR	END DATE MO YR	START DATE MO YR	END DATE MO YR	START DATE MO YR	END DATE MO YR	START DATE MO YR	END DATE MO YR
67. SPEND DOWN	START DATE MO YR	END DATE MO YR	START DATE MO YR	END DATE MO YR	START DATE MO YR	END DATE MO YR	START DATE MO YR	END DATE MO YR

LAST UPDATED

68. CONTROL	69. PROG. OBJ.	70. SOURCE	71. INDICATIVE DATE	72. OLD CLIENT ID	73. OLD CLIENT ID DATE

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II. Supporting Tables

The following four tables illustrate the findings described in section IV C (Distribution of Children's Deaths in the Low-Income Population in Maine):

Table A shows Maine age-specific **point-based** death rates by cause of death for all children, Low-Income children and Other children.

Table B shows Maine age-specific **period-based** death rates by cause of death for the three groups.

Each of these two tables also shows number of deaths (numerator) for each age group by cause of death. In addition, for the Low-Income children, the tables show the ratios of the Low-Income to the Other children's death rates as well as the statistical significance of the differences between the death rates of these two groups.

Table C shows Maine age-specific point-based death rates **by year** for all children, Low-Income children and Other children.

Table D shows Maine age-specific period-based death rates **by year** for the three groups.

Each of these two tables shows the numerator (number of deaths), the denominator (population base) and the death rates by age group and year, as well as the five-year averages. For the Low-Income children, these tables show the statistical significance of the differences between the death rates of Low-Income and Other children by year.

Table A
Childhood Age-Specific Point-Based Death Rates[a] by Cause of Death
Maine Residents, 5-year Average (1976-1980)

Age			All Causes	Accidents	
				All Accidents	Vehicle Related
All Children	8 days - 17 years	Number	1,038	373	215
		Rate	62.5	22.5	12.9
	8 days - 4 years	Number	521	74	24
		Rate	134.2	19.1	6.2
	5-14 years	Number	268	146	75
		Rate	28.3	15.4	7.9
	15-17 years	Number	249	153	116
		Rate	76.4	46.9	35.6
Low-Income Children	8 days - 17 years	Number	438	140	73
		Rate	139.7###	44.6###	23.3###
		Ratio	(3.1:1)	(2.6:1)	(2.2:1)
	8 days - 4 years	Number	242	36	12
		Rate	268.2###	39.9###	13.3##
		Ratio	(2.9:1)	(3.1:1)	(3.3:1)
	5-14 years	Number	112	59	31
		Rate	63.8###	33.6###	17.7###
		Ratio	(3.2:1)	(3.0:1)	(3.1:1)
	15-17 years	Number	84	45	30
		Rate	175.8###	94.2###	62.8##
		Ratio	(3.0:1)	(2.4:1)	(2.0:1)
Other Children	8 days - 17 years	Number	600	233	142
		Rate	44.5	17.3	10.5
	8 days - 4 years	Number	279	38	12
		Rate	93.6	12.7	4.0
	5-14 years	Number	156	87	44
		Rate	20.2	11.3	5.7
	15-17 years	Number	165	108	86
		Rate	59.3	38.8	30.9

NOTE: n.a. = not applicable.

[a] Deaths per 100,000 children.

[b] Rate not calculated because the numerator was less than 10. Rates based on small numerators are subject to large chance fluctuation.

Cause of Death									
						Disease-Related Causes			
Fire	Drowning	All Other	Suicide	Homicide	Other External Causes	All Diseases	Congenital Anomalies	Perinatal Conditions	All Other
52	41	65	26	20	11	608	148	46	414
3.1	2.5	3.9	1.6	1.2	0.7	36.6	8.9	2.8	24.9
19	11	20	n.a.	5	3	439	118	46	275
4.9	2.8	5.1		b	b	113.0	30.4	11.8	70.8
29	15	27	4	5	5	108	20	0	88
3.1	1.6	2.9	b	b	b	11.4	2.1	b	9.3
4	15	18	22	10	3	61	10	0	51
b	4.6	5.5	6.7	3.1	b	18.7	3.1	b	15.6
28	20	19	7	11	6	274###	69###	16#	189###
8.9###	6.4###	6.1	b	3.5	b	87.4###	22.0###	5.1#	60.3###
(4.9:1)	(4.0:1)	(1.8:1)		b		(3.5:1)	(3.7:1)	(2.3:1)	(3.6:1)
11	7	6	n.a.	3	2	201###	55###	16	130##
12.2	b	b		b	b	222.8###	61.0###	17.7	144.1##
b						(2.8:1)	(2.9:1)	(1.8:1)	(3.0:1)
14	6	8	0	3	1	49###	9	0	40
8.0##	b	b	b	b	b	27.9###	b	b	22.8##
(4.2:1)						(3.6:1)			(3.7:1)
3	7	5	7	5	3	24###	5	0	19##
b	b	b	b	b	b	50.2###	b	b	39.8##
						(3.8:1)			(3.5:1)
24	21	46	19	9	5	334	79	30	225
1.8	1.6	3.4	1.4	b	b	24.8	5.9	2.2	16.7
8	4	14	n.a.	2	1	238	63	30	145
b	b	4.7		b	b	79.8	21.1	10.1	48.6
15	9	19	4	2	4	59	11	0	48
1.9	b	2.5	b	b	b	7.7	1.4	b	6.2
1	8	13	15	5	0	37	5	0	32
b	b	4.7	5.4	b	b	13.3	b	b	11.5

Difference between Low-Income and Other rates statistically significant at the 0.001 level.
Significant at the 0.01 level.
Significant at the 0.05 level.

Table B
Childhood Age-Specific Period-Based Death Rates[a] by Cause of Death
Maine Residents, 5-year Average (1976-1980)

Age			All Causes	Accidents	
				All Accidents	Vehicle Related
All Children	8 days - 17 years	Number	1,038	373	215
		Rate	62.5	22.5	12.9
	8 days - 4 years	Number	521	74	24
		Rate	134.2	19.1	6.2
	5-14 years	Number	268	146	75
		Rate	28.3	15.4	7.9
	15-17 years	Number	249	153	116
		Rate	76.4	46.9	35.6
Low-Income Children	8 days - 17 years	Number	521	172	91
		Rate	96.7###	31.9###	16.9###
		Ratio	(2.1:1)	(1.8:1)	(1.5:1)
	8 days - 4 years	Number	238	42	16
		Rate	185.8###	27.1##	10.3
		Ratio	(1.9:1)	(2.0:1)	b
	5-14 years	Number	134	74	36
		Rate	44.4###	24.5###	11.9##
		Ratio	(2.1:1)	(2.2:1)	(2.0:1)
	15-17 years	Number	99	56	39
		Rate	120.6###	68.2##	47.5
		Ratio	(2.0:1)	(1.7:1)	(1.5:1)
Other Children	8 days - 17 years	Number	517	201	124
		Rate	46.1	17.9	11.1
	8 days - 4 years	Number	233	32	8
		Rate	09.8	13.7	b
	5-14 years	Number	134	72	39
		Rate	20.8	11.2	6.1
	15-17 years	Number	150	97	77
		Rate	61.5	39.3	31.6

NOTES: n.a. = not applicable.

[a] Deaths per 100,000 children

[b] Rate not calculated because the numerator was less than 10. Rates based on small numerators are subject to large chance fluctuation.

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Cause of Death									
						Disease-Related Causes			
Fire	Drowning	All Other	Suicide	Homicide	Other External Causes	All Diseases	Congenital Anomalies	Perinatal Conditions	All Other
52	41	65	26	20	11	608	148	46	414
3.1	2.5	3.9	1.6	1.2	0.7	36.6	8.9	2.8	24.9
19	11	20	n.a.	5	3	439	118	46	275
4.9	2.8	5.1		b	b	113.0	30.4	11.8	70.8
29	15	27	4	5	5	108	20	0	88
3.1	1.6	2.9	b	b	b	11.4	2.1	b	9.3
4	15	18	22	10	3	61	10	0	51
b	4.6	5.5	6.7	3.1	b	18.7	3.1	b	15.6
30###	24##	27	8	12	6	323###	78###	19	226##
5.6	4.5	5.0	b	2.2	b	59.9	14.5	3.5	41.9
(2.8:1)	(3.0:1)	(1.5:1)				(2.4:1)	(2.3:1)	(1.5:1)	(2.5:1)
11	7	8	n.a.	3	2	241###	62##	19	160##
7.1	b	b		b	b	155.5	40.0	12.3	103.2
b						(1.8:1)	(1.7:1)	(1.1:1)	(2.1:1)
16#	9	13	1	3	1	55###	10	0	45##
5.3	b	4.3	b	b	b	18.2	3.3	b	14.9
(2.7:1)		(2.0:1)				(2.2:1)	(2.1:1)		(2.2:1)
3	8	6	7	6	3	27	6	0	21#
b	b	b	b	b	b	32.9##	b	b	25.6
						(2.4:1)			(2.1:1)
22	17	38	18	8	5	285	70	27	188
2.0	1.5	3.4	1.6	b	b	25.4	6.2	2.4	16.8
8	4	12	n.a.	2	1	198	56	27	115
b	b	5.1		b	b	84.8	24.0	11.6	49.3
13	6	14	3	2	4	53	10	0	43
2.0	b	2.2	b	b	b	8.2	1.6	b	6.7
1	7	12	15	4	0	34	4	0	30
b	b	4.0	6.1	b	b	13.9	b	b	12.3

Difference between Low-Income and Other rates statistically significant at the 0.001 level.
Significant at the 0.01 level.
Significant at the 0.05 level.

3.12
Appendix

Table C
Childhood Age-Specific Point-Based Death Rates[a] by Year
Maine Residents, 1976-1980

Population Group	Age Group		Year					
			5-year Average	1976	1977	1978	1979	1980
All Children	8 days - 17 years	Numerator	207.6	209	195	218	218	198
		Denominator	332,149.2	343,706	336,155	329,900	329,409	321,576
		Rate	62.5	60.8	58.0	66.1	66.2	61.6
	8 days - 4 years	Numerator	104.2	106	97	109	107	102
		Denominator	77,673.8	78,163	76,524	76,621	78,742	78,319
		Rate	134.2	135.6	126.8	142.3	135.9	130.2
	5-14 yrs.	Numerator	53.6	56	52	59	56	45
		Denominator	189,264.0	199,753	194,193	188,343	185,297	178,734
		Rate	28.3	28.0	26.8	31.3	30.2	25.2
	15-17 yrs.	Numerator	49.8	47	46	50	55	51
		Denominator	65,211.4	65,790	65,438	64,936	65,370	64,523
		Rate	76.4	71.4	70.3	77.0	84.1	79.0

Population Group	Age Group		Year					
			5-year Average	1976	1977	1978	1979	1980
Low-Income Children	8 days - 17 years	Numerator	87.6	74	77	95	104	88
		Denominator	62,722.0	62,420	59,201	59,457	65,712	66,820
		Rate	139.7###	118.6###	130.1###	159.8###	158.3###	131.7###
	8 days - 4 years	Numerator	48.4	41	36	54	59	52
		Denominator	18,044.0	17,569	16,722	16,961	19,161	19,807
		Rate	268.2###	233.4##	215.3##	318.4###	307.9###	262.5###
	5-14 yrs.	Numerator	22.4	19	18	26	27	22
		Denominator	35,119.8	35,390	33,498	33,428	36,471	36,812
		Rate	63.8###	53.7##	53.7##	77.8###	74.0###	59.8###
	15-17 yrs.	Numerator	16.8	14	23	15	18	14
		Denominator	9,558.2	9,461	8,981	9,068	10,080	10,201
		Rate	175.8###	148.0#	256.1###	165.4##	178.6##	137.2
Other Children	8 days - 17 years	Numerator	120.0	135	118	123	114	110
		Denominator	269,427.2	281,286	276,954	270,443	263,697	254,756
		Rate	44.5	48.0	42.6	45.5	43.2	43.2
	8 days - 4 years	Numerator	55.8	65	61	55	48	50
		Denominator	59,629.8	60,594	59,802	59,660	59,581	58,512
		Rate	93.6	107.3	102.0	92.2	80.6	85.5
	5-14 yrs.	Numerator	31.2	37	34	33	29	23
		Denominator	154,144.2	164,363	160,695	154,915	148,826	141,922
		Rate	20.2	22.5	21.2	21.3	19.5	16.2
	15-17 yrs.	Numerator	33.0	33	23	35	37	37
		Denominator	55,653.2	56,329	56,457	55,868	55,290	54,322
		Rate	59.3	58.6	40.7	62.6	66.9	68.1

[a]Deaths per 100,000 children.

Difference between Low-Income and Other rates statistically significant at the 0.001 level.
Significant at the 0.01 level.
Significant at the 0.05 level.

3.14
Appendix

Table D
Childhood Age-Specific Period-Based Death Rates[a] by Year
Maine Residents, 1976-1980

Population Group	Age Group		Year					
			5-year Average	1976	1977	1978	1979	1980
All Children	8 days - 17 years	Numerator	207.6	209	195	218	218	198
		Denominator	332,149.2	343,706	336,155	329,900	329,409	321,576
		Rate	62.5	60.8	58.0	66.1	66.2	61.6
	8 days - 4 years	Numerator	104.2	106	97	109	107	102
		Denominator	77,673.8	78,163	76,524	76,621	78,742	78,319
		Rate	134.2	135.6	126.8	142.3	135.9	130.2
	5-14 yrs.	Numerator	53.6	56	52	59	56	45
		Denominator	189,264.0	199,753	194,193	188,343	185,297	178,734
		Rate	28.3	28.0	26.8	31.3	30.2	25.2
	15-17 yrs.	Numerator	49.8	47	46	50	55	51
		Denominator	65,211.4	65,790	65,438	64,936	65,370	64,523
		Rate	76.4	71.4	70.3	77.0	84.1	79.0

Population Group	Age Group		Year					
			5-year Average	1976	1977	1978	1979	1980
Low-Income Children	8 days - 17 years	Numerator	104.2	91	95	113	120	102
		Denominator	107,802.0	117,192	101,440	100,931	105,068	114,379
		Rate	96.7###	77.7##	93.7###	112.0###	114.2###	89.2###
	8 days - 4 years	Numerator	57.6	48	48	64	68	60
		Denominator	30,994.8	32,986	28,653	28,793	30,637	33,905
		Rate	185.8###	145.5	167.5##	222.3###	222.0###	177.0##
	5-14 yrs.	Numerator	26.8	25	22	31	28	28
		Denominator	60,382.6	66,444	57,398	56,745	58,314	63,012
		Rate	44.4###	37.6	38.3	54.6###	48.0##	44.4###
	15-17 yrs.	Numerator	19.8	18	25	18	24	14
		Denominator	16,424.6	17,762	15,389	15,393	16,117	17,462
		Rate	120.6###	101.3	162.5###	116.9	148.9##	80.2
Other Children	8 days - 17 years	Numerator	103.4	118	100	105	98	96
		Denominator	224,347.2	226,514	234,715	228,969	224,341	207,197
		Rate	46.1	52.1	42.6	45.9	43.7	46.3
	8 days - 4 years	Numerator	46.6	58	49	45	39	42
		Denominator	46,679.0	45,177	47,871	47,828	48,105	44,414
		Rate	99.8	128.4	102.4	94.1	81.1	94.6
	5-14 yrs.	Numerator	26.8	31	30	28	28	17
		Denominator	128,881.4	133,309	136,795	131,598	126,983	115,722
		Rate	20.8	23.3	21.9	21.3	22.1	14.7
	15-17 yrs.	Numerator	30.0	29	21	32	31	37
		Denominator	48,786.8	48,028	50,049	49,543	49,253	47,061
		Rate	61.5	60.4	42.0	64.6	62.9	78.6

[a]Deaths per 100,000 children.

Difference between Low-Income and Other rates statistically significant at the 0.001 level.

Significant at the 0.01 level.

3.16
Appendix

A direct comparison of the point-based and the period-based death rates for low-income children ages 8 days-17 years has been abstracted from Tables A and B and is shown below.

Causes	Point-Based Death Rates	Period-Based Death Rates
All Causes	139.7###	96.7###
All Accidents	44.6###	31.9###
Vehicle-Related	23.3###	16.9###
Fire	8.9###	5.6###
Drowning	6.4###	4.5##
All Other	6.1	5.0
Suicide	b	b
Homicide	3.5	2.2
Other External	b	b
All Diseases	87.4###	59.9###
Congenital Anomalies	22.0###	14.5###
Perinatal Conditions	5.1#	3.5
All Other	60.3###	41.9###

b— *Rate not calculated because the numerator was less than 10. Rates based on small numerators are subject to large chance fluctuation.*
Difference betwen Low-Income and Other rates statistically significant at the 0.001 level.
Significant at the 0.01 level.
Significant at the 0.05 level.

It should be noted that the period-based death rates are lower than the point-based death rates throughout the illustration. This is true for all age-groups (as shown in Tables A and B, pp. App. 3.8-3.11). It should also be noted that, whether the point-based or the period-based death rate is used, the death rates for Low-Income children are significantly higher than the rates for Other children for All Causes, All Accidents and All Diseases and the great majority of the sub-categories of these major causes.

Comparison of the two figures, all children who were on Departmental programs at any one point in time and all children on Departmental programs during a period of a year, indicates that the latter figure is approximately double the former (See Tables C and D, pp. App. 3.12-3.15). This comparison suggests a pool of poor and near-poor children, only about half of whom are participating in social welfare programs at any given time. Almost certainly there is a group of perpetually poor children who never leave welfare status until they outgrow their eligibility. Other Low-Income children apparently compete for the remaining available slots, with turnover occurring as the fortunes of individual family units rise and fall due to a variety of factors.

The relative risk of dying is 3 for a child on a Departmental program at any point in time. The relative risk of dying is approximately 2 for children who participated during a given year. It is quite clear that risk is substantially higher when the child is actually on a welfare program; risk decreases when the child becomes ineligible for program participation, a sign of improved economic status or better family organization or both. Children are at greatest risk of dying when the family is at its nadir, socially and/or economically. Children who have not been on a Departmental program are at lowest risk; children who have recently "graduated" from welfare status or who "bounce" in and out of such programs appear to have intermediate risk.

It is important to remember that, in some cases, illness causes poverty instead of the other way around, particularly with disease-related causes. A child's long chronic illness may adversely affect the family's economic standing, so that at the time of death the child is a participant in a Departmental program. Such a situation contributes to the finding that the relative risk found in using the point prevalence approach is higher than the relative risk found in using the period prevalence approach.

Maine Children's Deaths by County of Residence 1976-1980

Maine's children's deaths, and death rates, by County of residence for 1976-1980 are presented in Tables A and B. Table A also compares the County rates with corresponding rates for Maine and for the United States.

Table A
Children's Death Rates[a] by Cause and County of Residence
Maine Resident Data, 1976-1980 (5-year average) and U.S. White Data (1978)

State/County/U.S.	Cause of Death												
		Accidents								Disease-Related Causes			
	All Causes	All Accidents	Motor Vehicle	Fire	Drowning	All Other	Suicide	Homicide	Other External Causes	All Disease-Related	Congenital Anomalies	Perinatal Conditions	Other Disease-Related
MAINE	92.5###	30.8	20.9	3.0##	2.6	4.3###	2.7	1.5###	0.6###	56.9###	14.2	17.7###	24.5###
Androscoggin	95.1#	30.0	23.5	b	b	b	b	b	b	61.1	20.0	18.2#	22.9##
Aroostook	89.1##	33.5	20.9	b	b	6.0	b	b	b	53.8##	13.1	17.3##	23.3
Cumberland	81.2###	21.2###	14.6###	b	b	3.8###	b	b	b	55.0###	13.7	14.0###	27.4
Franklin	112.2	41.2	28.2	b	b	b	b	b	b	62.8	b	21.7	23.8
Hancock	100.3	38.0	22.8	b	b	b	b	b	b	59.3	19.8	19.8	19.8
Kennebec	87.5###	26.7	20.7	b	b	b	b	b	b	55.7##	11.5	19.1	25.1
Knox	96.1	45.1	33.3	b	b	b	b	b	b	43.1##	b	b	19.6
Lincoln	94.8	31.6	24.3	b	b	b	b	b	b	58.3	b	b	24.3
Oxford	107.2	41.0	26.5	b	b	b	b	b	b	62.7	15.7	25.3	21.7
Penobscot	85.0###	25.1##	16.7	b	b	b	b	b	b	52.8###	13.7	18.9#	20.3###
Piscataquis	113.2	56.6	b	b	b	b	b	b	b	53.1	b	b	b
Sagadahoc	77.4##	25.8	b	b	b	b	b	b	b	47.6#	b	b	27.8
Somerset	110.2	46.4	30.1	b	b	b	b	b	b	62.6	18.8	22.5	21.3
Waldo	91.8	30.6	22.4	b	b	b	b	b	b	59.2	b	b	30.6
Washington	123.2	42.2	25.3	b	b	b	b	b	b	74.3	b	23.6	40.5
York	95.1##	31.0	22.4	b	b	5.2	4.7	b	b	58.1##	13.3	17.2##	27.5
United States	110.4	33.4	21.1	1.8	3.3	7.2	2.8	2.7	1.7	69.8	14.2	25.1	30.5

[a] Deaths per 100,000 children aged 0-19 years.

[b] Rate not calculated because the numerator was less than 10. Rates based on small numerators are subject to large chance fluctuation.

Difference between Maine and U.S. rates statistically significant at the 0.001 level.
Significant at the 0.01 level.
Significant at the 0.05 level.

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Table B
Children's Deaths[a] by Cause and County of Residence
Maine Resident Data, 1976-1980 (5-year totals)

State/County	Cause of Death												
	All Causes	Accidents					Suicide	Homicide	Other External Causes	Disease-Related Causes			
		All Accidents	Motor Vehicle	Fire	Drowning	All Other				All Disease-Related	Congenital Anomalies	Perinatal Conditions	Other Disease Related
MAINE	1,737	578	392	57	49	80	50	29	12	1,068	267	333	468
Androscoggin	162	51	40	6	1	4	4	2	1	104	34	31	39
Aroostook	149	56	35	7	4	10	1	1	1	90	22	29	39
Cumberland	279	73	48	5	7	13	8	6	3	189	47	48	94
Franklin	52	19	13	4	0	2	1	1	2	29	8	10	11
Hancock	66	25	15	0	6	4	2	0	0	39	13	13	13
Kennebec	161	49	38	4	7	0	6	4	0	102	21	35	46
Knox	49	23	17	4	2	0	3	1	0	22	7	5	10
Lincoln	39	13	10	0	1	2	2	0	0	24	5	9	10
Oxford	89	34	22	6	1	5	1	0	2	52	13	21	18
Penobscot	193	57	38	2	9	8	8	7	1	120	31	43	46
Piscataquis	32	16	6	5	3	2	1	0	0	15	3	4	8
Sagadahoc	39	13	8	0	2	3	1	1	0	24	5	5	14
Somerset	88	37	24	5	0	8	0	1	0	50	15	18	17
Waldo	45	15	11	0	0	4	0	0	1	29	6	8	15
Washington	73	25	15	5	2	3	1	2	1	44	6	14	24
York	221	72	52	4	4	12	11	3	0	135	31	40	64

[a]Deaths to children aged 0-19 years.

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Keeping in mind the relatively small number of deaths in each County for each cause of death, it may be noted that none of the County cause-specific death rates were significantly higher than the corresponding U.S. rates. Indeed, a number of the County cause-specific death rates were significantly lower than the corresponding U.S. rates as follows:

Children's Death Rates for	Significantly Lower than U.S. Rates in
All Causes	Androscoggin Aroostook Cumberland Kennebec Penobscot Sagadahoc York
All Accidents	Cumberland Penobscot
Motor Vehicle Accidents	Cumberland
Accidents other than Motor Vehicle, Fire and Drowning	Cumberland
All Disease-Related Causes	Aroostook Cumberland Kennebec Knox Penobscot Sagadahoc York
Perinatal Conditions	Aroostook Androscoggin Cumberland Penobscot York
Disease-Related Causes other than Congenital Abnormalities and Perinatal Conditions	Aroostook Penobscot